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BATTLEFIELD DISPERSION

The Hidden Dimension In The Principle Of Mass

**A Monograph
by
Major Gary H. Cheek
Field Artillery**

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**School of Advanced Military Studies
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Fort Leavenworth, Kansas**

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ABSTRACT

BATTLEFIELD DISPERSION: THE HIDDEN DIMENSION IN THE PRINCIPLE OF MASS by MAJ Gary H. Cheek, USA, 56 pages.

This monograph explores the origins of the principle of mass and its components: numerical strength, combat power and the decisive point. It concludes that the Napoleonic legacy of the principle of mass has not kept pace with modern battlefield dispersion and the evolutionary diffusion of the decisive point. Therefore, leaders must consider the nature of battlefield dispersion in order to understand the utility of the principle of mass under modern conditions.

Jomini defined the principle of mass as bringing superior numbers upon the decisive point. FM 100-5 substitutes combat power for numbers, acknowledging the impact of weapons technology on the nature of war. However, the definition of decisive point remains largely unchanged from that of Jomini--generally either a geographic or force-oriented point. While geographic decisive points remain somewhat the same, the force-oriented decisive point has undergone considerable change from the time of Jomini. This monograph argues that battlefield dispersion has rendered the force-oriented decisive point much less decisive than in the time of Jomini, and that through dispersion, it is possible to "deny the decisive point" to the enemy and thereby dissipate his combat power.

This monograph presents two historical cases which illustrate the dimension of dispersion within the principle of mass. First, the South African War, 1899-1902 shows the relationship among leadership, firepower, mobility and dispersion. It shows the hazards of adhering to an outdated concept of mass, as modern weapons dictate the allowable density of unit formations. The second case study is the Second Indochina War, 1965-1973. This case illustrates how spatial and temporal dispersion allow an inferior force to exhaust a superior foe. It further illustrates the limitations of combat power and its requirement for a decisive point.

The monograph then examines the implications for the future and the role of dispersion for light contingency forces, peacekeeping, artillery tactics and weapons of mass destruction. It addresses the impact of technology and how modern acquisition systems and precision munitions will be able to attack dispersed formations. It concludes that the diffused decisive points of today are far less decisive yet more numerous than in the past. This phenomenon has largely eliminated the Napoleonic decisive battle of the past and now requires an orchestration of lesser battles, known today as operational art.

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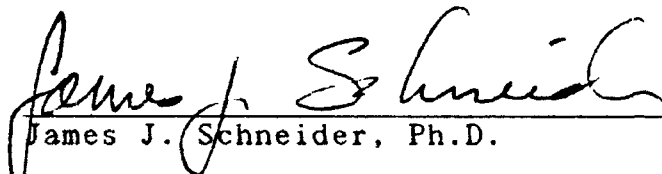
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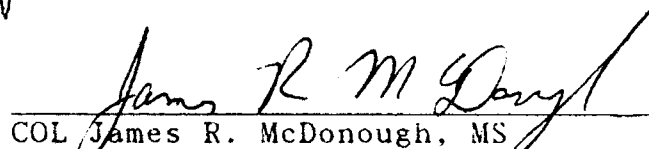
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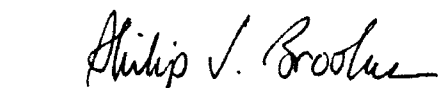
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INTRODUCTION

Know the enemy and know yourself; in a hundred battles you will never be in peril.

Sun Tzu

Huba Wass de Czege, in his monograph "Understanding and Developing Combat Power," expressed concern about the use of our nine traditional principles of war. He exhorted us to "understand the dynamics which underlie their application" and cautioned us that our principles of war are indeed "one sided." He noted it is imperative that we understand the "two sided nature of war;" to know the enemy and yourself.¹ This monograph is such a foray into the other side of the nature of war. It investigates the time-proven principle of mass and its hidden dimension--dispersion.

The principle of mass exhorts us to "mass the effects of overwhelming combat power at the decisive place and time."² Yet for the inferior force, the antithesis is true: deny your enemy the "decisive place and time," and his "overwhelming combat power" will lose its effect. This monograph explores the use of dispersion to deny "the decisive place and time." It concludes that a product of the "empty battlefield"--the hidden dimension of dispersion--has diffused the principle of mass. In reality, the classic definition of the principle of mass is a Napoleonic anachronism that has not kept pace with battlefield dispersion and the evolutionary dilution of the decisive point.

PART 1: IMPLICATIONS FOR THEORY

THE EVOLUTION OF THE PRINCIPLE OF MASS

Although the principle of mass is largely associated with Antoine-Henri Jomini and the Napoleonic era, its first appearance as a principle of war came from Henry Lloyd, a Welshman who fought for the French and, later, with the Prussians during the time of Frederick the Great. Lloyd said:

...a greater number of men than the enemy must be put into action at the most important point on a line of operations or on a line of attack...³

From this Jomini derived his own version of the principle of mass: To mass your forces "upon the decisive point," at the "proper time and with ample energy." Jomini felt this principle to be the foundation of the art of war but recognized the simplicity of his "one great principle" and that the real challenge would be to recognize the decisive point.⁴

This version of the principle of mass was a product of the Napoleonic era; an era characterized by universal conscription and the first mass armies in modern history.⁵ Napoleon directed his mass army using four strategic principles of campaigning:

The first was that every campaign should have one clearly defined objective. The second, that the main enemy force should be that objective. . . .Third. . . . that the army must maneuver in such a way as to place itself on the flank and rear of the enemy. Finally, Napoleon sought to strike at the line of communications of his enemy, while keeping his own heavily protected.⁶

From this we can see the somewhat limited scope of Napoleonic

strategy. For the most significant aspect of Napoleonic war is that "generally the war was decided in one campaign by one decisive battle."⁷

This is the true legacy of the principle of mass. It characterized a mechanical collision between two centers of gravity at a decisive point, where the victor was able to mass superior force "at the proper time and with ample energy." Because of the relatively slow change of weapons technology, this period of history was one of the few where there was a congruence of weapons, theory and practice.⁸ Consequently, the principle of mass truly reached its pinnacle, as Jomini hailed it to be the "one great principle [that] underlies all the operations of war."⁹ However, the Industrial Revolution would bring rapid change to warfare, with technology once again leaving theory and practice many years behind.

Nowhere was this divergence more apparent than in the American Civil War. The Industrial Revolution produced lethal innovations such as the rifled percussion cap musket, the conoidal bullet, and the breechloading rifle. "Yet close-order linear tactics persisted, at great and unnecessary expense in casualties."¹⁰ It was in this conflict the principle of mass met its first challenge, because massed forces were too often annihilated by the increased lethality of the new weapons. The entrenched defense became dominant as the battles of Malvern Hill, Gettysburg, Cold Harbor and Kennesaw Mountain so aptly

demonstrated. In those battles, frontal assaults were the norm, as were close-order column formations. As the war continued, experienced soldiers noted that skirmishers and smaller units took less casualties.¹¹ Thus, the natural recourse for survival became dispersion, a factor that would escalate ten fold by the time of World War I.¹²

THE IMPACT OF THE INDUSTRIAL REVOLUTION

The increased lethality of modern weapons was to have a dramatic effect on the future battlefield. Perhaps none predicted it as well as Jean de Bloch, a Polish banker with no military experience. In his 1899 book, The Future of War, Bloch depicted a battlefield where entrenched positions, smokeless powder, high fragmentation artillery shells, and extremely accurate rifles with high rates of fire would dominate. Gone were the days of massed assault formations: rather:

In the present day, armies almost always advance and act in loose formation, and with this the influence of the mass on the individual unit disappears.¹³

Thus, Bloch saw the emerging lethality of the battlefield and the need for new tactics in order to survive. The result of this lethality turned out to be "The Empty Battlefield."

THE EMERGENCE OF THE EMPTY BATTLEFIELD

Dr. James J. Schneider in his article "The Theory of the Empty Battlefield," addresses the paradox that in spite of the increased lethality of modern weapons, casualty rates have actually declined. He concluded:

In battle, as in all human endeavour, it is man who is the final arbiter and it is man himself who unknowingly

provided the solution to the empty battlefield. Quite simply, man 'decided' to reduce his vulnerability through dispersion in order to save himself from annihilation in combat.¹⁴

This had a profound impact on the principle of mass, as the typical density of combat formations had fallen from 3,883 men per square kilometer in the US Civil War to only 404 men per square kilometer by World War I--during a span of only 50 years.¹⁵ Considering this 100 fold growth in dispersion took place "unknowingly," the ramifications of increased dispersion on training, moral cohesion, and doctrine remained for the most part unrecognized.

It would appear that increased dispersion would negate the Jominian approach of massing numbers at the decisive point: if an army massed at the decisive point, it would itself become a victim of modern battlefield lethality. At the same time, it would seem the enemy forces at the "decisive point" would have dispersed also, making that point no longer decisive and corrupting the geometric concept of a point in space. However, the principle of mass proved its versatility, finding a new form in the concentration of force as combat power.

COMBAT POWER ENTERS THE PRINCIPLE OF MASS

In October 1914, Frederick W. Lanchester addressed the relationship between numerical strength and fighting strength with his linear and square laws. These laws differentiated between sheer numbers and the ability to observe targets and concentrate fire.¹⁶ Yet it was J. F. C. Fuller who placed combat power into the principle of mass, in his 1926 book,

The Foundations of the Science of War, noting:

Concentration, from the point of view of battle, has for centuries been based on the maxim of "superiority of numbers at the decisive point," because numbers were the coefficient of weapons, each man normally being a one weapon mounting. As a general rule, this maxim no longer holds good and in its place must be substituted "superiority of weapons, means of protection and movement." [emphasis original]¹⁷

Thus, the modern principle of mass was born and with it the concept of combat power in place of "superiority of numbers." However, both Lanchester and Fuller directed their analysis at the massing of force and its weaponry, and overlooked the dispersed nature of formations. They did not address the futility of massing numerical strength on the increasingly lethal battlefield. They simply matched weapons with numerical strength and developed a value of combat power without regard to troop density. Thus, while Fuller's principle of mass correctly substituted combat power for numbers of troops, it only inadvertently compensated for dispersed formations, for the increased ranges of rifles and indirect fire artillery continued to allow combat formations to mass the effects of weapons on the decisive point in spite of increased dispersion.

Fuller's "superiority of weapons, means of protection and movement" closely parallel the combat power functions of maneuver, firepower, protection and leadership the US Army uses today. Colonel Huba Wass de Czege developed these in his 1984 monograph, "Understanding and Developing Combat Power." He defined combat power as:

that property of combat action which influences the outcome of battle. [That] the appropriate combination of maneuver, firepower, and protection by a skillful leader within a sound operational plan will turn combat potential into actual combat power. [emphasis original]¹⁸

Wass de Czege noted that combat power is relative to the enemy; that leadership maximizes the effects of firepower and maneuver against the enemy, simultaneously using protection to minimize the effects of enemy firepower and maneuver. It was within his concept of protection that he addressed dispersion--a means to make "soldiers, systems, and units difficult to locate, to strike or to destroy."¹⁹

In his book Understanding War, Trevor N. Dupuy presents an operational research method to quantify the factors of combat power. Like Wass de Czege, his Quantified Judgement Model also considers the two sides of war, allowing for a relative comparison of two forces. However, his model directly addresses how dispersed forces degrade the effectiveness of weapons. Dupuy derives a Theoretical Lethality Index (TLI) for each weapon based on its rate of fire, its reliability, its accuracy, its range, and the number of targets it can strike at one time. He then divides the TLI with a dispersion factor based on the doctrinal density of the target and produces an Operational Lethality Index (OLI). The OLI reflects not only weapon effectiveness, but the dispersed nature of the battlefield as well.²⁰

This is perhaps the most striking difference between the combat power models put forth by Fuller and Lanchester and those Wass de Czege and Dupuy developed. Wass de Czege and

Dupuy allow for dispersion, and Dupuy specifically recognized the dispersion trend and its impact on weapons capability. With the density of combat formations falling from 404 men per square kilometer in World War I to 36 in World War II and only 25 in the October War,²¹ the final question remains, "will there be a formation on the battlefield with enough density to constitute a decisive point?"

THE DECISIVE POINT

Jomini determined decisive points as both geographic features and positions occupied by the enemy. To be decisive, both must have a distinct relationship to the strategic goal. If a decisive point were so valuable that the entire campaign hinged on its capture, then it would become a decisive strategic point.²²

The Preliminary Draft of FM 100-5 "Operations" (21 August 1992) defines decisive points as:

potential objectives which will provide a commander with a marked advantage over his opponent. . . . [They are] usually geographic in nature. . . . [but] could include other physical elements such as enemy formations, a critical boundary, or a communications node. Decisive points are not centers of gravity, but are the keys to getting at the centers of gravity.²³

Thus, Jomini's decisive point and the current decisive point in FM 100-5 are virtually the same. Both Jomini and FM 100-5 identify two types of decisive points: Geographic and force-oriented. It is this legacy from the Napoleonic era that presents the quandary of the principle of mass. For while the geographic decisive point has endured, the force-oriented decisive point is diffusing and offers the

opportunity to "deny the decisive point."

THE DECISIVE POINT: PRESENT AND FUTURE

It is important to note at the outset that the geographic decisive point is little changed from the time of Jomini. For if a geographic point is indeed the objective of two warring forces, then the one who generates the most combat power at that point will carry the day. For as Dupuy said in his book Understanding War,

When all of the circumstances are quantified and applied to the numbers of troops and weapons, the side with the greater combat power on the battlefield is always seen to prevail.²⁴

For according to Dupuy, "Superior Combat Power Always Wins."²⁵

However, when one analyzes the force-oriented decisive point, it is indeed much changed from the time of Jomini. Gone are the huge masses of men--for armies no longer concentrate on one decisive point to decide a war with one great battle. Indeed, armies are now distributed throughout the theater of operations, with formation densities nearly 200 times less than the time of Jomini.²⁶ From this analysis we can determine that force-oriented decisive points will contain fewer men, and consequently will be much less decisive than in the time of Jomini. However, there will be a far greater number of these "less" decisive points, scattered throughout the theater of operations. Thus, once the decisive point entered the "empty battlefield" where man dispersed "to save himself from annihilation in combat," the

principle of mass found itself striking at air.

This has important ramifications for the inferior force. For if you face an enemy with superior combat power, which Dupuy tells us "will always win," it would be foolish to meet him in battle at a decisive point. Understanding this, Mao Tse-Tung said:

We should resolutely fight a decisive engagement in every campaign or battle in which we are sure of victory; we should avoid a decisive engagement in every campaign or battle in which we are not sure of victory and we should avoid absolutely a strategically decisive engagement on which the fate of the whole nation is staked.²⁷

This is the key for the inferior force. If the enemy has superior combat power, then deny him "the decisive place and time" and his combat power will lose its effect. The means to achieve this has been dispersion--the hidden dimension of mass.

BATTLEFIELD DISPERSION

Dispersion is the natural reaction to increased battlefield lethality. Major William G. Stewart, an Engineer Officer in the 1960's defined its relationship to the elements of combat power in his article, "Interaction of Firepower, Mobility and Dispersion." He said:

It is well to note here that of the three force characteristics being discussed, only firepower and mobility are really basic. Dispersion is simply a result of the other two. The enemy's firepower and mobility *require* us to disperse. Our own firepower and mobility *permit* us to disperse over an area, probably different than the first. It is when our capabilities do not permit us to disperse as much as the enemy capabilities require of us that we are in trouble. [emphasis original]²⁸

Stewart's insight clarifies the reason and need for

battlefield dispersion. Dispersion is not simply a result of enemy firepower, but of enemy mobility as well. Units require a certain amount of dispersion to offset the effects of enemy firepower and mobility. But at the same time, for a unit to disperse effectively, it must have mobility. It is when a unit does not or can not disperse enough that it creates a "decisive point" for its enemy. That, as Stewart put it, is when "we are in trouble."

Also, the evolving dispersion of men on the battlefield has not left a homogeneous array of soldiers on the ground. As Dupuy said in Understanding War:

Troops in units are not distributed over ground space uniformly, but in patterns of varying concentration.²⁹

Even though modern battle formations bear little resemblance to their Napoleonic counterparts, contemporary units have greater density in some areas than in others. This is due to the need for moral cohesion, command and control, physical limits on dispersion, and external factors--the challenges dispersion presents.

CHALLENGES OF DISPERSION

In war, concepts such as dispersion are often simple in statement but challenging in practice. For as Carl von Clausewitz said, "Everything in war is very simple, but the simplest thing is difficult."³⁰ This is certainly true about dispersion. For if a force decides to disperse to "deny the decisive point," then it complicates an already complex environment in many critical aspects of warfighting. Its

greatest impact will be on the moral cohesion of the men of the force itself.

Moral cohesion binds men together and fosters effective units. It is a product of the density of troops and the number of leaders.³¹ By diluting the density of troops, dispersion tends to subvert moral cohesion. Christopher Bellamy, in his book, The Future of Land Warfare, described the ramifications of dispersion on small units:

....men need comradeship and group solidarity to enable them to endure the horrors and exertion of war. Dispersed, in small groups or alone, morale and effectiveness rapidly decline, especially as the outcome and goals of continued efforts become unclear.³²

Indeed, dispersion degrades the morale and fighting ability of men in battle. Consequently, unit performance suffers, as S. L. A. Marshall observed:

I hold it to be one of the simplest truths of war that the thing which enables an infantry soldier to keep going with his weapons is the near presence or the presumed presence of a comrade.....He must have at least some feeling of spiritual unity with them if he is to do an efficient job of moving and fighting. Should he lack this feeling.....he will become a castaway in the middle of a battle and as incapable of effective offensive action as if he were stranded somewhere without weapons.³³

Thus, when a unit disperses, its reduction of moral cohesion may render it combat ineffective. Clearly, any decision to disperse to "deny the decisive point" will have to address this problem.

Another challenge dispersion presents is in the cybernetic domain of battle; command and control. As dispersion has increased 200-fold from the days of Napoleon, the demands on command systems have increased as well.³⁴

Spatial separation makes communications much more difficult and relies upon technology to provide the link. However, in spite of complex communications systems, passing information throughout units to all individuals is virtually impossible. This lack of authoritative information leads to speculation, rumors, fears, misunderstandings, and may cause panic.³⁵ Once again, any decision to disperse, must address the difficulty of passing information to a dispersed force or risk unit disintegration.

Another challenge to dispersal is target acquisition technology coupled with precision munitions. Frank Barnaby, in his book Future War, quoted General William C. Westmoreland who in 1969 said:

On the battlefield of the future, enemy forces will be located, tracked, and targeted almost instantaneously through the use of data links, computer assisted intelligence evaluation, and automated fire control. With first round kill probabilities approaching certainty, and with surveillance devices that can continually track the enemy, the need for large forces to fix the opposition physically will be less important. I see battlefields on which we can destroy anything we locate through instant communications and the almost instantaneous application of highly lethal firepower.³⁶

Some twenty years after Westmoreland delivered his vision the future battlefield, much of the technology he described has come to fruition. However, although target acquisition systems and precision guided munitions pose great threats to dispersed forces, they are far more devastating to massed forces. Should technology progress to the point Westmoreland envisioned, then even the dispersed force would face annihilation as every man could potentially become a

"decisive point."

The advances in firepower technology coupled with advanced target acquisition systems highlights another challenge for the dispersing force: The need for mobility. As Stewart pointed out, firepower and mobility permit dispersion. In order to disperse in the face of superior firepower, a force must have some form of mobility--preferably greater mobility than the enemy. When facing an enemy with superior mobility and firepower, dispersion becomes difficult. No doubt an inferior force will have to rely on numerous environmental and external factors to provide dispersion opportunities, in order to counteract the superior firepower and mobility of its enemy.

There are many external and environmental factors a dispersing force must consider. Foremost of these are the political goals. They must not hinge on geographical points, or dispersion becomes unfeasible. Equally important is the theater of operations; for in order to disperse, there must be an abundance of space.³⁷ Finally, the dispersed force must determine a means to support its units without creating a lucrative "decisive point." These external factors point out that to use dispersion as a tactic requires circumstances that allow for its employment. For according to Mao:

....we must study the laws of war in general, we must also study the laws of revolutionary war, and, finally, we must study the laws of China's revolutionary war.³⁸

Mao understood that every war is unique. Consequently, Mao would advocate dispersion to "deny the decisive point" only

after evaluating the challenges of dispersion within the context of the war he was fighting.

WINNING WITH DISPERSION

As Stewart said, dispersion is a reaction to enemy firepower and mobility. If this is true, how can dispersed forces win with a reactive strategy? Clausewitz would categorize such a strategy as defensive--a "reaction" with a negative aim. He described such an aim as follows:

If a negative aim--that is, the use of every means available for pure resistance--gives an advantage in war, the advantage need only be enough to balance any superiority the opponent may possess: in the end his political object will not seem worth the effort it costs. He must then renounce his policy.[emphasis original]³⁹

This points to a strategy of attrition that would ultimately lead to exhausting the enemy. The dispersed force would seek to negate the combat power of its adversary using space and time.

Another aspect of dispersion is the ability of the dispersing force to gain moral ascendancy over its opponent. Because the dispersed force presents no discernable decisive point to its enemy, it in essence becomes invisible. When it strikes from this invisible posture, it gains psychological leverage over its enemy, creating the impression that it is indeed everywhere. In the mind of its opponent, the dispersed force seemingly has greater mass.

"Winning with dispersion" means countering the principle of mass by understanding the nature of the modern battlefield. It specifically focuses on the force-oriented

decisive point and denying that point to enemy combat power. This monograph will examine two historical cases to determine the utility of dispersion to "deny the decisive point." It will focus on the post-industrial revolution era and evaluate the principle of mass outside of its Napoleonic setting. Additionally, the study will evaluate the utility of dispersion for the inferior force to negate the effects of superior combat power. Ultimately, each of these cases will challenge the principle of mass and provide insight into its viability for the future.

PART 2--HISTORICAL CASES OF DISPERSION

THE MODEL FOR EVALUATING DISPERSION

This monograph will examine the following historical cases: The South African War, 1899-1902; and The Second Indochina War 1965-1973. It will use the following model:

1. Introduction. This will present the dispersion thesis for the conflict.
2. Conflict Background. This will include the theater of operations of the war, as well as the political situation and overall strategic goals for both sides.
3. Combat Power Comparison. This will examine both sides of the conflict using the elements of combat power: firepower, maneuver, protection and leadership. It will include observations of both protagonists and use battle actions to illustrate the points.

4. Analysis. This will include how the inferior force coped with the challenges of dispersion: Moral cohesion, command and control, advanced technology, mobility, and external factors.

5. Conclusion. This portion will identify the enduring dispersion lesson for the case study.

THE SOUTH AFRICAN WAR, 1899-1902

DISPERSION TO CONCENTRATE COMBAT POWER

During this conflict, the Boers were able to concentrate firepower from dispersed formations against massed British troops. While perhaps this is more an indictment of British adherence to the Napoleonic concept of mass, its utility is to show that on a modern, lethal battlefield, mass must have an element of dispersion. Weapons technology influences the allowable density of mass: to use an outdated density of mass risks defeat. This was evident particularly during the South African War, as a lecture on 5 March 1902 by Lieutenant Colonel von Lindenau of the German General Staff pointed out:

And England's Army had to learn yet another old truth on the battle-field, which had been forgotten in the changes of time. We can opportunely repeat it, so that we may not lose its application. Under the influence of experience, Captain von Luttwitz, of the German General Staff, who was with the British, grasped it, and thus wrote from the theatre of war:--*Tactical formations are governed by fire effect, modern weapons govern modern formations.* [emphasis original]⁴⁰

CONFLICT BACKGROUND

Commonly known as the Boer War, this conflict began when

negotiations between Transvaal President Paul Kruger, and the British Governor of Cape Colony, Sir Alfred Milner, collapsed in October of 1899. Publicly, Great Britain's stated interest was to protect the rights of its subjects in South Africa. However, its larger, unstated interest was to preserve its hegemony in the region and keep other European countries from gaining inroads to the South African gold and diamond mining operations.

The Boers, descendants of the Dutch, merely wanted to preserve their independence. Much of their conflict with the British concerned treatment of native Africans. When British parliament outlawed black slavery throughout the empire, the Boers migrated north into Natal. When Britain annexed Natal in 1843, the Boers moved once more, over the Drakensberg mountains to found the Orange and Transvaal republics. The discovery of gold in Transvaal in 1882 brought great numbers of British prospectors into Boer territory and once again threatened Boer independence.⁴¹

Thus, this war would pit the professional armies of the British commonwealth against the Boer republics--two small states with rural populations. Far from a professional force, the Boers learned warfare as citizen soldiers fighting African tribes along their frontier. The theater of war was in the Transvaal region of South Africa; an area of open rolling grasslands known as the veldt, and scattered rocky hills known as kopjes.⁴²

COMPARISON OF COMBAT POWER

In the first years of the conflict, it was the Boers who were able to generate superior combat power. Their understanding of the nature of modern war and use of dispersion enabled them to take advantage of the capabilities of their weapons. The German Official Account of the War in South Africa depicts the impact of Boer combat power on the numerically superior British forces:

There was a feeling that it was impossible to fight against an enemy who, concealed from view, understood how to make the most of his excellent weapons, and who seemed himself to be quite insensible to the heaviest artillery fire. Officers and men declared that they had not seen a single Boer in action. A British officer describing this "emptiness of the battle-field" as the most uncanny feature in the modern attack, says that one had during an action the paralyzing sensation of advancing to meet an invisible fate against which no weapon could avail; when firing, it was only possible to aim at random in the general direction from which the enemy's bullets appeared to come; his invisibility fostered the suspicion that he was everywhere.⁴³

In numerical strength, the Boers could muster no more than 88,000 fighting men during the war. By contrast, the British had over 450,000 men serve during the three year war.⁴⁴ This overwhelming numerical advantage gave the British Army far greater combat potential than their Boer adversary. However, it is "the appropriate combination of maneuver, firepower and protection by a skillful leader" that will turn that potential into combat power.⁴⁵ It was in application that the Boers were able to overcome their numerical inferiority: for their dispersed nature made them seem as if they were "everywhere."

FIREPOWER

Both sides were essentially equal in weapons capability. Although some of the Boer systems were more modern, the lethality and volume of fire of individual weapons for both sides were virtually the same.⁴⁶ By virtue of their numerical advantage, strong industrial base, and viable supply system, the British Army had the potential to generate superior firepower.⁴⁷ However, superiority in accuracy of fires, target acquisition, and flexibility of employment, enabled the Boers to generate superior firepower.

Accuracy of fires was a great advantage for the Boers. They were natural marksmen: a result of their rural culture and generations of conflict with the native African tribes. By contrast, the British favored volley fire and placed little emphasis on individual marksmanship.⁴⁸

There was a great disparity in target acquisition between the two protagonists. Neither side had a technological advantage to acquire targets. However, because of Boer dispersal and camouflage, the British were unable to target Boer dispositions accurately and struck at their positions blindly. By contrast, the Boers were able to acquire and attack the massed formations of British soldiers in the open veldt with relative impunity.⁴⁹

Finally, the last advantage to the Boers was their flexibility in employment of firepower. While British doctrine retained volley firing,

[t]he Boers dispensed with all direction of fire: each individual directed the fire-power of his weapon entirely on his own initiative, usually against that target which he could best distinguish, which he judged to be the most important, and which, taking into consideration its distance from him and its size, promised the most favourable results from his fire.⁵⁰

This gave the Boers flexibility in weapons employment while simultaneously allowing them to disperse for their own protection. It allowed them to concentrate fire from dispersed positions on attacking British columns.

MANEUVER

In terms of mobility, the Boers had a great advantage over the British as virtually all their forces were mounted infantry. By contrast, the British mounted only one eighth of their infantry; the balance remained footbound. Thus, while the British used close order formations to march into battle, the Boers would ride horses to the battlefield, dismount into defensive positions, and offer battle. If the battle did not go well, the Boers could simply remount and retreat, easily escaping their more cumbersome foe. The British had no such luxury. This highlighted the first principle of Boer tactics--mobility.⁵¹

British tactics emphasized the traditions of the European battlefield. They conducted predictable "Aldershot" set-piece battles: First the artillery duel and preparation; second the infantry attack and charge; third, the cavalry charge to cut off the enemy retreat.⁵² Against modern weapons, such tactics required careful coordination and synchronization. Without effective cooperation among the

arms, the advancing infantry was extremely vulnerable, as one private wrote after the battle of Magersfontein:

Such was the day for our regiment
Dread the revenge we will take
Dearly we paid for the blunder--
A drawing-room General's mistake

Why weren't we told of the trenches?
Why weren't we told of the wire?
Why were we marched up in column?
May Tommy Atkins enquire...⁵³

At Magersfontein, (figure 1) British Major General Andrew Wauchope marched his Highland Brigade of four battalions into battle, "in the most compact formation in their drill book: 3500 men, 30 companies, 90 files, all compressed into a column 40 yards wide by 160 yards long."⁵⁴ Wauchope and his contemporaries placed a premium on controlling their forces, preferring to march their formations into battle. Only then would they deploy their infantry into firing lines and direct fire by volleys. Unfortunately for Wachope, his artillery preparation was ineffective against the concealed and dispersed Boer positions. Wauchope failed to recognize the impact of the open rolling veldt, accurate, long-range rifle fire, and the tactics of his Boer enemy.⁵⁵ The lack of cooperation between the infantry and artillery left the Boer riflemen unsuppressed and Boer rifle fire decimated his close order infantry column.⁵⁶

By contrast, the Boers were masters of dispersion and concealment. They would entrench their positions, disperse their infantry along a thin linear front, and hide both their

artillery pieces and infantry positions. They maintained no reserves and had little tactical depth. These linear formations allowed the Boers to direct virtually all their weapons against the massed British infantry, and used the rolling veldt to its best advantage. Their superior mobility made up for their lack of depth and reserves, as they were able to shift their mounted forces rapidly along the line or retreat as the situation dictated.⁵⁷ Boer tactics took advantage of the terrain, the potential of modern weapons, mobility, and the tactics of their adversary. These factors more than made up for the numerical disadvantage a simple correlation of mass would indicate.

PROTECTION

In terms of protection, the Boers were again far superior. Because they understood the set piece tactics of their enemy, they used cover, mobility and concealment to negate the effects of the predictable British.⁵⁸ As a Boer prisoner commented after the battle of Magersfontein:

We could always tell what you were going to do. You would bombard our trenches for a time--anything from a couple of hours to a couple of days. Then your soldiers would march straight at us. It was very brave but [damned] foolish. For while your shells were bursting in our advanced trenches, we were not there.⁵⁹

Boer fieldcraft, dispersion and mobility afforded them protection from British firepower. In contrast, massed troop movements increased British vulnerability to Boer firepower.

LEADERSHIP

It is evident that the greatest failure for the British was one of leadership. They had weapons parity and numerical

superiority, yet they failed to generate superior combat power--confirming that leadership is the crucial element in developing combat power. British leaders used a doctrine that was out of touch with the modern battlefield. Their technical drills were for a battlefield of muskets and volley fire; not the deadly maelstrom smokeless rifle fire. The disciplined and brave soldiers of the British Army could not overcome a doctrine, as Michael Howard would put it, that was "too terribly wrong."⁶⁰

By comparison, the Boers were hardly a professional force. They were a citizen army with an informal leadership environment. Their major tactical decisions were the result of Councils of War and compromises. Their citizen soldiers were not always reliable and would desert or even defect to the other side. Yet, the Boer cause was strong and their senior leaders inspirational. They developed tactics that were current with the nature of the modern battlefield. They knew how to defeat the tactics of their foe. It was the understanding of battlefield effects, technical proficiency in rudimentary fieldcraft, and coherent defensive tactics that gave them success.⁶¹

ANALYSIS: COPING WITH THE CHALLENGES OF DISPERSION

The Boers had technological parity with the British as well as superior knowledge of the terrain and superior mobility. Therefore, the most serious challenges of dispersion the Boers faced were maintaining moral cohesion and effective command and control.

Moral cohesion was particularly difficult for the Boers as their citizen army had neither unit bonds nor unit history. Leaders were not professional soldiers and had no experience coordinating unit actions. Placed in a dispersed and often isolated position, Boer units were sometimes intimidated by the numerically superior masses of British infantry and the long artillery preparations. This resulted in desertions, units leaving positions without permission and a lack of faith among leaders as some could not be trusted to carry out their mission.⁶² The Boer leaders never solved these problems.

An effective command and control system can alleviate problems with moral cohesion that dispersed formations create. While the telegraph provided strategic communications, at the tactical level the Boers relied upon rudimentary signals. For example, at the Battle of Magersfontein, the Boer commander, General Louis Botha used a Krupp howitzer to order his men to open fire.⁶³ This system, coupled with individual firing, allowed the Boers to operate without rigid control measures such as those the British used. However, their lack of a tactical communications system gave them no means to stop occasional unit desertions and panic.

This type of command climate severely limited the tactical options of the Boer commanders. Even though the capabilities of the individual Boer soldier were quite good, Boer commanders were able only to execute plans for defensive

operations. As The German Official Account of the War in South Africa concluded:

The purely defensive fighting methods of the Boers, designed solely to repulse attacks, and based on the clinging to ground, originated in the sense of their own weakness of which they were forced to be more and more conscious when they recognized their want of military training, organisation, and leadership, and, more than all, their complete lack of discipline.⁶⁴

The inability to transition to the offense after successful defensive operations ultimately kept the Boers from achieving decisive victories early in the war. Thus, the Boers fought an attrition war with an enemy far superior in money, men, quantity of weapons and material; a war that would ultimately devastate their homeland.

CONCLUSION: DISPERSION TO CONCENTRATE FIREPOWER

In spite of numerical inferiority, the Boers were able to generate superior combat power. Their dispersed positions not only gave them protection from British firepower, but also allowed them to concentrate virtually all their rifle fire into massed British troops. Boer tactical mobility allowed them to occupy dispersed positions and gave them the flexibility to reinforce or depart the battlefield as necessary.

The South African War is a classic illustration of the relationship among leadership, firepower, mobility and dispersion. The Boers dispersed adequately to negate the effects of British firepower, yet did so well within the capabilities of their own mobility and firepower. The British, unwilling to disperse and without the Boer's

tactical mobility, found themselves in the "trouble" that Stewart described in his analysis of firepower, mobility and dispersion. Their Napoleonic concept of mass in the age of modern weapons negated their advantage in combat potential and allowed the Boers to achieve superior combat power. British leadership was unable to derive the "appropriate combination of maneuver, firepower, and protection."

Throughout the war, the Boers remained independent of geographical points. Consequently, the war keyed upon the Boer Army. By virtue of their dispersed formations and superior mobility, the Boers were able to deny the British a force-oriented decisive point. Indeed, the Boers had the best conceivable situation--an enemy who granted them a decisive point upon which they could mass their firepower, while they gave him the "emptiness of the battle-field" in return. As the "Lessons of the South African and Chinese Wars" concluded:

A peculiarity of the Boer War is the absence of big decisive action in the field....The Boer tactics save men, [as] the Boer policy was to avoid any chance of a big unfavourable decisive fight....The Boers showed a cunning in this game which has never been attained by any Army. It is due primarily to their cleverness in moving mounted and fighting dismounted.⁶⁵

The foremost lesson of this conflict is understanding the relationship between firepower, mobility and dispersion. For as Captain Luttwitz observed, tactical formations are "governed by fire effect; modern weapons govern modern formations." Indeed, Modern weapons govern the allowable density of mass, and require a certain amount of dispersion.

The capability of modern weapons allows us to concentrate firepower from dispersed positions. Finally, mobility provides the means not only to employ firepower, but to disperse, mass, and disperse again.

THE SECOND INDOCHINA WAR, 1965-1973

DISPERSION TO EXHAUST

With the arrival of United States combat units into South Vietnam, North Vietnam realized it would be unable to achieve victory through a direct conventional military confrontation. Under the direction of General Vo Nguyen Giap, the North Vietnamese Army (NVA) transitioned predominantly to guerrilla warfare. This enabled the NVA to negate the effects of superior US firepower, for

. . . the war of the guerrilla is an explicit denial of the *hauptschlacht*; [the decisive battle] it is an admission that one is not yet ready for the decisive campaign.⁶⁶

With few exceptions, the NVA adhered to this "explicit denial of the [decisive battle]." While this negative aim may not have been able to defeat a superior enemy, in essence it prevented their own defeat.

CONFLICT BACKGROUND

United States involvement in Vietnam was an extremely complex issue set within the context and circumstances of the Cold War. The perception of "monolithic Communism" as well as its experience in the Korean War shaped United States policy. The Viet Minh victory over the French at Dienbienphu

on 7 May 1954, coupled with the Geneva Conference the following day, resulted in the partitioning of Vietnam at the 17th parallel. This left Ho Chi Minh and his Communist Party in the north. In the south, Ngo Dinh Diem lead a fledgling Republic of Vietnam.⁶⁷ United States Presidents Eisenhower, Kennedy, Johnson, and Nixon all pledged support for the Republic of Vietnam.

In spite of US aid, by 1965 it was apparent that the Army of the Republic of Vietnam (ARVN) would be unable to cope with its northern aggressor. Thus, at the request of General Westmoreland, President Johnson committed United States ground forces to South Vietnam in March of 1965. This commitment escalated to nearly 200,000 troops by the end of the year with a full military commitment to the defense of South Vietnam.⁶⁸ The ensuing conflict pitted American forces

against the North Vietnamese and Viet Cong, both supplied by Communist China and the Soviet Union (independently and without coordination). The United States had entered into the longest, oddest, and by far the most unpopular war in its history. It was a war without a fixed front; the enemy was here, there and everywhere. General Vo Nguyen Giap, North Vietnam defense minister and victor in the previous war (1945-1954) against France, had made the operations of guerrilla warfare a science. American forces held only the soil on which they stood in a war of thousands of savage engagements without a single major battle in the conventional modern sense. The war was a phantasmagoria of brutal combat, political and social entanglements, and unceasing frustration. The military effort was heavily influenced by political considerations in Washington.⁶⁹

COMPARISON OF COMBAT POWER

The United States was far superior to North Vietnam in combat power. US Forces had overwhelming firepower, rapid

helicopter mobility, heavily fortified positions and armored vehicles--as well as the finest military schools in the world. However, as Sun Tzu said, "In war, numbers alone confer no advantage. Do not advance relying on sheer military power." For in guerrilla wars, the stronger nation often has difficulty bringing its weapons superiority to bear on an elusive enemy, usually a light infantry force.⁷⁰ Clausewitz regarded the infantry to be the most independent of branches--that inferiority in the supplementary branches (cavalry and artillery) could be overcome with superior infantry.⁷¹ Given the jungle terrain, long, supposedly "neutral state" borders, and the virtual sanctuary of North Vietnam, this was indeed an ideal setting for "superior infantry."

FIREPOWER

The United States was far superior in firepower potential, the most notable advantage being airpower and artillery. The US air arsenal included B-52 bombers, a vast array of fighter bombers, and helicopter gunships. Additionally, the multitude of artillery systems and mortars made US firepower potential seem boundless.

However, the North Vietnamese Army (NVA) and Viet Cong (VC) had virtual parity and in some cases superiority to US and allied infantry weapons. The NVA/VC infantry arsenal included: AK 47 assault rifles, heavy and light machineguns, 57mm and 75mm recoilless rifles, the versatile rocket propelled grenade (RPG) and an array of personal arms and

grenades.⁷²

Booby traps were another formidable source of firepower employed particularly by the VC. These not only caused US casualties, but had a psychological impact on US troops as well. Booby traps consisted of "punji stake pits," mines and various fabricated explosives--mostly from stolen or unexploded US ordnance. These devices slowed US operations and caused infantry units to disperse, lessening their cohesion and combat power.⁷³ Thus, while the US and allied forces had superiority in supporting weapons, the NVA and VC had parity or even a slight advantage in organic infantry weapons.

MANEUVER

The differential in firepower had an ominous impact on US tactics, as General William Depuy noted:

[I]f you just wanted to analyze what happened in Vietnam you'd say the infantry found the enemy and the artillery and the air killed the enemy⁷⁴

Likewise, for the NVA and VC, if they could avoid the massive US supporting fires--that is, if the enemy could remain hidden--then they could fight the war on a more equal footing. Unfortunately for the US and the ARVN:

It would be a mistake to conclude that our great superiority in fire power and mobility [was] exposing the VC to perpetual and savage punishment, under which they ought to crack sooner rather than later. In reality, only a relatively small proportion of the VC order of battle [was] ground up at any one time.⁷⁵

Helicopter mobility would also seem to be a great advantage for the US forces. However, when asked to comment on the Battle of Ia Drang, General Giap concluded:

[The First Cavalry Division] was a highly mobile division with a high degree of flexibility, capable of launching sudden attacks supported by heavy firepower. But the Americans didn't understand that we had our soldiers almost everywhere; that it was very hard to surprise us. When we heard the helicopters, we went on alert and prepared for battle wherever you landed. Being on the spot, everywhere, was the best mobility of all.⁷⁶

By being "everywhere," the dispersed VC and NVA were able to lessen the advantage the helicopter gave the US and ARVN troops. This, coupled with their superior foot mobility, actually gave the VC and NVA a mobility advantage.⁷⁷

Early success employing helicopters and firepower convinced US leaders the "search and destroy" tactics were indeed the best way to defeat the insurgent VC and NVA. Yet, the North Vietnamese adapted to these tactics and ultimately avoided battle except when they chose to fight. NVA units occupied remote areas to draw US units away from villages. The VC remained in the villages to anchor their support from the populace. More accustomed to conventional war, the US leadership chose to seek and destroy the NVA units, leaving the VC free to control the populace. NVA and VC dispersed their units, and used raids, ambushes, sapper attacks and booby traps to maintain the initiative. Indeed, they generally denied US forces decisive battle,⁷⁸ as the war was

distinguished from more conventional war by the spasmodic nature of its engagements. Despite their high kill rate, and, on the whole, favorable kill ratio, American forces conduct[ed] many search-without-destroy missions; and, on the VC side, the men, on the whole, move frequently and fight rarely. Statements from the interviewees seem to suggest that the average VC military unit is engaged in full-scale action only a few times a year.[emphasis original]⁷⁹

Thus, the contrast of US firepower versus NVA/VC denial tactics gave the US forces indications of success, yet in reality allowed the VC freedom of action among the populace. In 1968 General Creighton Abrams officially adopted a "one war" approach that focused on securing the villages from the VC. However, the inclination to "kill VC" and the consequent fixation on attrition warfare lingered, and US units continued using firepower tactics.⁸⁰

PROTECTION

As Wass de Czege noted, the first component of protection is

all actions to counter the enemy's firepower and maneuver by making soldiers, systems, and units difficult to locate, to strike, or to destroy.⁸¹

US units used fortifications to protect their soldiers from the enemy. By contrast, the VC/NVA used concealment and dispersion to hide their forces, as well as extensive tunnels and trenches. The VC commonly dispersed their units in three man cells among the rural population. But perhaps their most effective tactic was their "nomad system" which allowed NVA and VC units to travel along secure routes to safe, fortified campsites. Leaders selected campsites using three criteria: defensibility, cover, and distance to the next campsite. This system made NVA/VC units difficult to locate, and once located, difficult to destroy. In addition, the nomad system enabled them to better control the civilian populace while still allowing for their infrequent combat actions.²

This NVA/VC penchant for infrequent combat operations

was also a means of protection--in essence, the dispersion of combat over time. This conserved fighting strength, and allowed for extensive planning and resupply. It also recognized the essential need to continuously indoctrinate soldiers, as well as to control the civilian population. This dispersion of combat over time enhanced the strategy of protracted war, while simultaneously improving the chances for tactical success.

LEADERSHIP

When asked at a press conference what his answer to insurgency was, General Westmoreland replied, "firepower."⁸³ This typified the US approach to war--a preoccupation with large conventional forces, firepower, and linear, terrain-oriented battles. In contrast, Giap's strategy

was to draw American forces away from pacification and engage them in inconclusive battles along the frontiers, inflicting U.S. casualties in the process and sapping U.S. will to continue the war.⁸⁴

However, VC and NVA tactical leadership was perhaps the most crucial factor. The hard-core cadre leadership served as recruiters, political instructors, newsmen, counselors, military trainers and combat leaders. They completely dedicated themselves to the Communist cause. They led by example and earned the trust and respect of their subordinates. This firm leadership, coupled with the infrequency of combat, allowed NVA/VC units to withstand the rigors of combat and remain true to their cause even under harsh conditions.⁸⁵

ANALYSIS: COPING WITH THE CHALLENGES OF DISPERSION

The US forces had formidable firepower and using helicopters, excellent mobility as well. The lethality and flexibility of US weapons systems had a devastating effect on the moral cohesion of NVA/VC units. NVA/VC soldiers were keenly aware of the killing power of US weapons. In one account, a North Vietnamese soldier assessed the relative damage to his unit:

First it was the artillery, second, the helicopters, and third, the bombers. [At the front] they are afraid of [the Cobra gunship]. . . It was very difficult for us to hide from that kind of helicopter because they flew very low and thereby, were able to spot targets very easily . . . that kind of helicopter strafed fiercely with [its 7.62mm machineguns].⁸⁶

Such firepower and mobility required the NVA and VC to disperse. They did so both spatially and temporally. Spatial dispersion allowed units to lessen the effects of US firepower, while temporal dispersion gave soldiers time between battles to recuperate from the rigors of combat. During these rest periods, cadre leaders conducted extensive reviews of combat operations, particularly when missions did not go well. Finally, their focus on the three man primary group fostered group cohesion and enabled leaders to retain absolute control.⁸⁷

In spite of their dispersed units and frequent movement, the VC and NVA were able to communicate effectively. They used captured radios, messengers, wire, pyrotechnics, bugles, whistles and visual signals to communicate. They also maintained strict communications security. Their "temporal

dispersion" of tactical operations allowed them to accommodate a relatively slow communications system, as they could take months to prepare for future missions.⁸⁸

A number of external factors helped the North Vietnamese cope with the challenges of dispersion. First of all, the jungle terrain was ideal for dispersal and concealment from US observation and weapon systems. Also, self-imposed political restraints kept US ground forces from invading North Vietnam. This virtually eliminated the potential for geographic decisive points, which the North Vietnamese might have chosen to defend.

Finally, a strategy of attrition attacks enemy soldiers, units, and its leadership in order to break the opposition's will to fight.⁸⁹ The North Vietnamese physical and temporal dispersion, three man cell primary groups, and strong cadre leadership ultimately gave them the strength to withstand superior US combat power. As Konrad Kellen concluded in his 1969 study of Viet Cong cohesion:

Could it be. . . that the VC "is not capable of collapse and surrender?" That, so to speak, some form of collapse, surrender or disintegration short of being ground up altogether is not among the enemy's capabilities? If that is so, the enemy could conceivably force us not only to accept increasing losses of our own, but also to kill more of him (and his civilian population) than can be in our national interest.[emphasis original]⁹⁰

CONCLUSION: DISPERSION TO EXHAUST

The Second Indochina War illustrates how dispersion exhausts combat power. While the NVA and VC readily understood they could not defeat American military might,

they were determined not to lose.⁹¹ To do this, they dispersed: temporally to protract the war and maintain moral cohesion, and spatially to "deny the decisive point."

Denial of a force-oriented decisive point required the North Vietnamese to be free from defending geographic decisive points. US political constraints provided much of this freedom, as they prevented US ground troops from entering North Vietnam. In addition, China and the Soviet Union provided North Vietnam with much of its warmaking potential. Thus, North Vietnam had virtually no industrial base--which meant there was a dearth of strategic targets for US airpower. Ultimately, the only decisive point became the force-oriented decisive point; a point the NVA and VC denied to their more powerful enemy. Their spatial and temporal dispersion gave the NVA and VC the freedom of action to control the populace. In the end, it was the people of South Vietnam that proved to be their center of gravity.⁹²

The Second Indochina War is another prime example of the relationship among leadership, firepower, mobility and dispersion. As Stewart noted, dispersion is a reaction to firepower and mobility--a reaction the NVA and VC used extremely well. It also illustrates how a lack of decisive points limit the effectiveness of combat power. The US Army's firepower strategy of attrition attacked NVA and VC units that were both spatially and temporally dispersed. This dispersion "denied the [force-oriented] decisive point" and enabled the NVA and VC to endure US combat power and

still control the rural population of South Vietnam. Ultimately, because the US Army was unable to break the NVA/VC control of the South Vietnamese populace, its massive combat power in reality fell upon "indecisive points."

PART 3: FINAL IMPLICATIONS

THE PRINCIPLE OF MASS: NAPOLEONIC ANACHRONISM?

Certainly the principle of mass has changed tremendously since the Napoleonic era. The increase in weapons lethality changed from "numbers" to "combat power" at the decisive point. Furthermore, battlefield dispersion virtually eliminated the strategic value of mass: one decisive battle could no longer decide a campaign, much less a war. Today the concept of mass continues to rely upon the notion of the decisive point: a geographic or force-oriented point which may or may not materialize. As the combatants in warfare disperse, these decisive points become more diffused and less decisive. While decisive points still exist, ultimately they may disappear--leaving the "mass of combat power" to strike at air.

Mao noted that every war is unique, and therefore so are the circumstances that allow the "denial of the decisive point." These circumstances must include an environment conducive to dispersion and the absence of geographic decisive points. As the United States discovered, Vietnam was such an environment. However, as the British in the South African War would attest, whenever a leader is foolish

enough to present a massed army as a decisive point, application of the principle of concentration will likely destroy that army through modern battlefield lethality. Ultimately, the utility of the principle of mass is a recognition that its application requires an understanding of the nature of dispersion.

BATTLEFIELD DISPERSION: EXTENSION TO THE FUTURE

Using protection as an element of combat power, capable leaders must endeavor to prevent an enemy from detecting and destroying their units. Dispersion is one such means; it allows a force to "deny the decisive point." Thus, the US Army should expect to face such a foe--one who will not present a decisive point in the face of overwhelming combat power. Equally as important, the US Army must understand the "two sided nature of war" and use dispersion to deny decisive points to potential adversaries as well. There are several examples that are particularly relevant to the future.

One such example is a light contingency force that may deploy to face an enemy with superior combat power. During Operation Desert Shield, the 2nd Brigade of the 82nd Airborne Division was the first US ground force deployed to defend Saudi Arabia. They faced the Iraqi Army--a force with superior mobility and superior firepower. The 2nd Brigade employed an archipelago type of defense, with islands of anti-tank weapons in depth. This type of defense capitalized on spatial dispersion to compensate for inferiority in both firepower and mobility.⁹³

Another example is peacekeeping forces. These forces often find themselves preserving an unsteady peace between two hostile factions. By their nature, peacekeeping forces are normally lightly equipped and are therefore vulnerable to more mobile and heavily armed forces. This was certainly true during recent peacekeeping operations in former Yugoslavia.⁹⁴ Given the likelihood of inferiority in both mobility and firepower, dispersion is a potential protection option for peacekeeping forces.

Recent trends in artillery tactics emphasize dispersion to defeat counterbattery fire. Modern artillery platforms such as the M270 Multiple Launched Rocket System, and the M109A6 155mm self-propelled howitzer have on-board communication, survey and firing data computation capability. This allows rocket launchers and howitzers to operate independently on the battlefield, using mobility and dispersion to negate potential enemy counterfire while retaining the capability to concentrate indirect fire on targets.⁹⁵

Finally, the nuclear, chemical, and biological battlefield places a premium on protecting the force. While nuclear weapons are often touted as the ultimate form of massing firepower, to be effective they must strike a viable target. Therefore, leaders should disperse their forces and installations to minimize the destructive potential of weapons of mass destruction. Commanders will be able to mass their forces only when there is a reduction in the risk of

employment of such weapons. Such a battlefield environment will "increase the need for dispersion and negate the advantages of concentration."⁹⁶

Throughout each of these examples looms technology. As Westmoreland envisioned, the ability to find, track, and engage targets quickly and accurately is fast approaching reality. Satellites, airborne radars, and remotely piloted vehicles coupled with smart weapons using a myriad of thermal, acoustic, electro-optical and microwave sensors all allow for detection and engagement of point targets. Such technology may prove to be the key to defeating dispersion, using weapons that are independent of the principle of mass.

DISPERSION: THE HIDDEN DIMENSION OF MASS

The evolution of warfare has seen continuous improvement in both weapons lethality and mobility. The natural and less apparent reaction to this has been dispersion. This dispersion has virtually eliminated the Napoleonic decisive battle and replaced it with a series of distributed lesser battles, the orchestration of which we call operational art. These "lesser battles" represent the diffusion of the decisive point--an evolutionary change that has undermined the value of combat power at a single point. Therefore, leaders must recognize the Napoleonic origins of the principle of mass and its hidden dimension--dispersion. Only then will they be able to understand its potential uses and inherent limitations on the contemporary and future battlefield.

The Battle of Magersfontein 11 December 1899

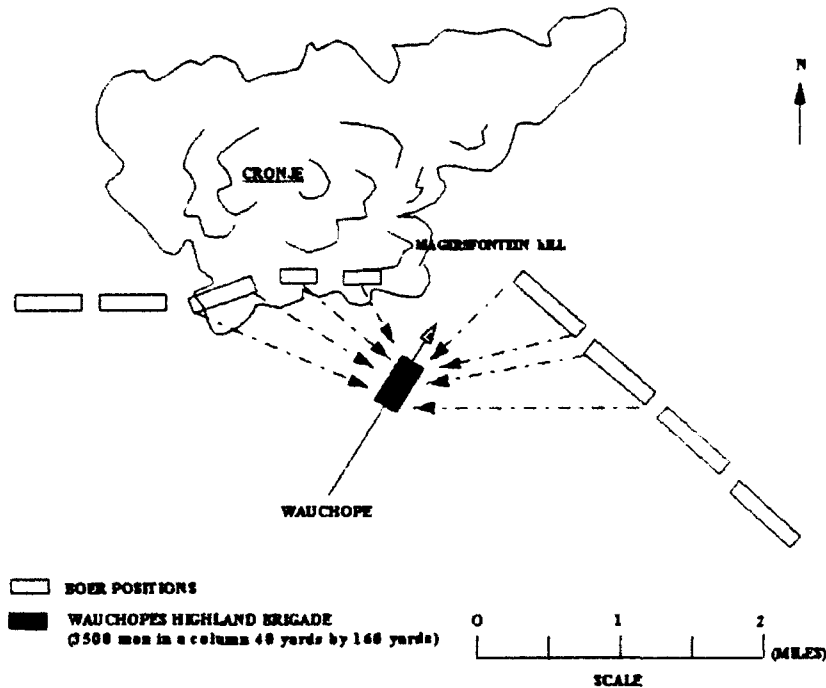
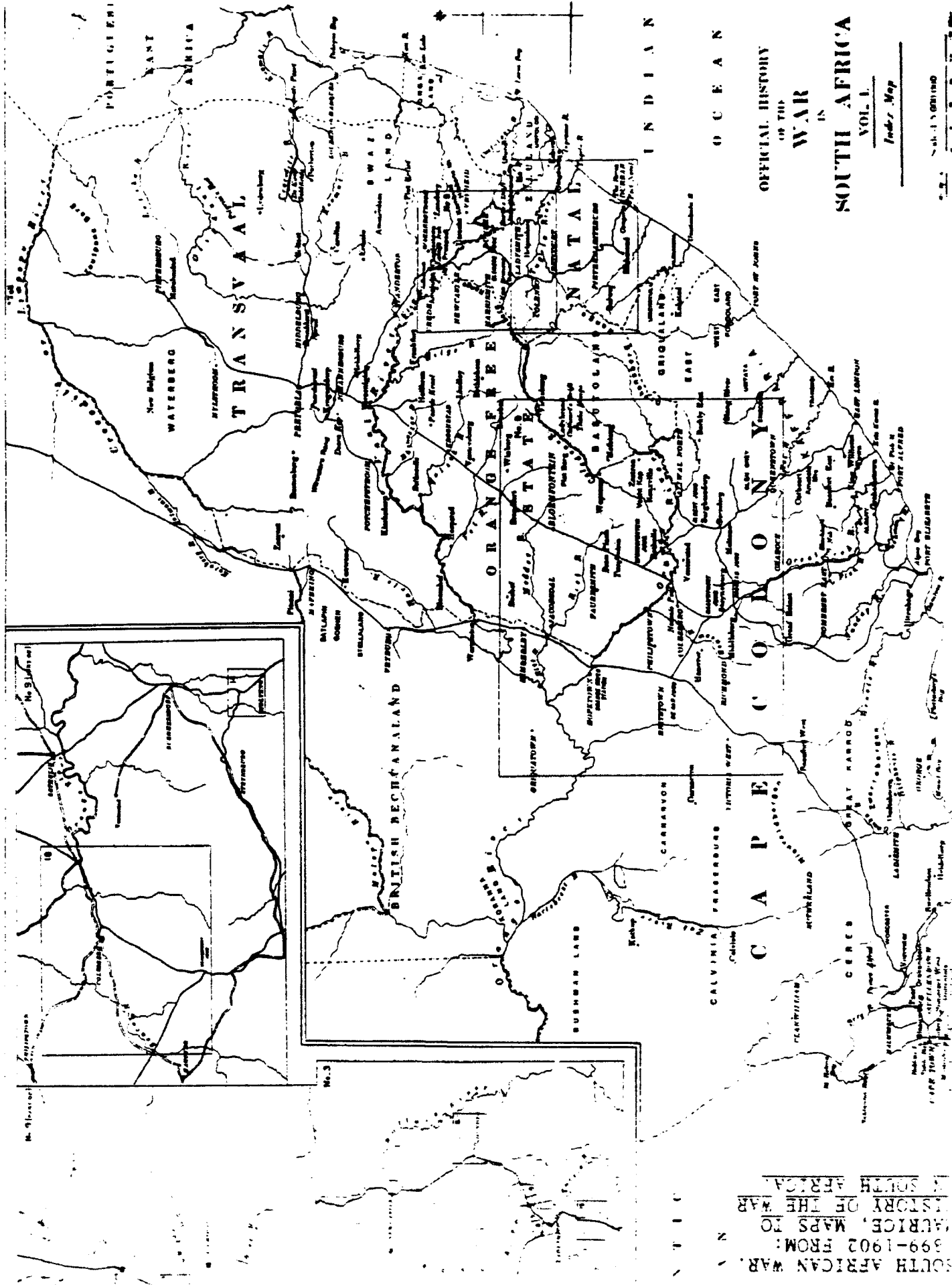


Figure 1

This figure depicts how Boer formations were able to concentrate firepower on massed British units. On 9 December 1899, Lieutenant-General Lord Roberts, commander of the 1st Infantry Division, ordered an attack on Boer positions near Magersfontein Hill. On the afternoon of 10 December, the supporting artillery fired preparatory fires on the suspected Boer trenches, ending the bombardment at dusk. Uncoordinated with the infantry attack, this preparation had little effect on Boer dispositions. At midnight, Wauchope's Highland Brigade began a night march in column to the Boer positions, planning to attack the Boers at dawn. The weather was stormy with rain and high winds, which slowed the brigade march. At dawn on 11 December, the weather cleared as the sky began to lighten. Major G. E. Benson, Wauchope's ADC, recommended the Brigade adopt open order. However, Wauchope directed the column to continue--he was afraid his men would "lose their direction." The column proceeded to within 400 yards of the concealed Boer trenches when Boer mausers engulfed the highland Brigade in a "river of flame." The British suffered 902 casualties, including Wauchope--found dead within 200 yards of the Boer trenches.⁹⁷

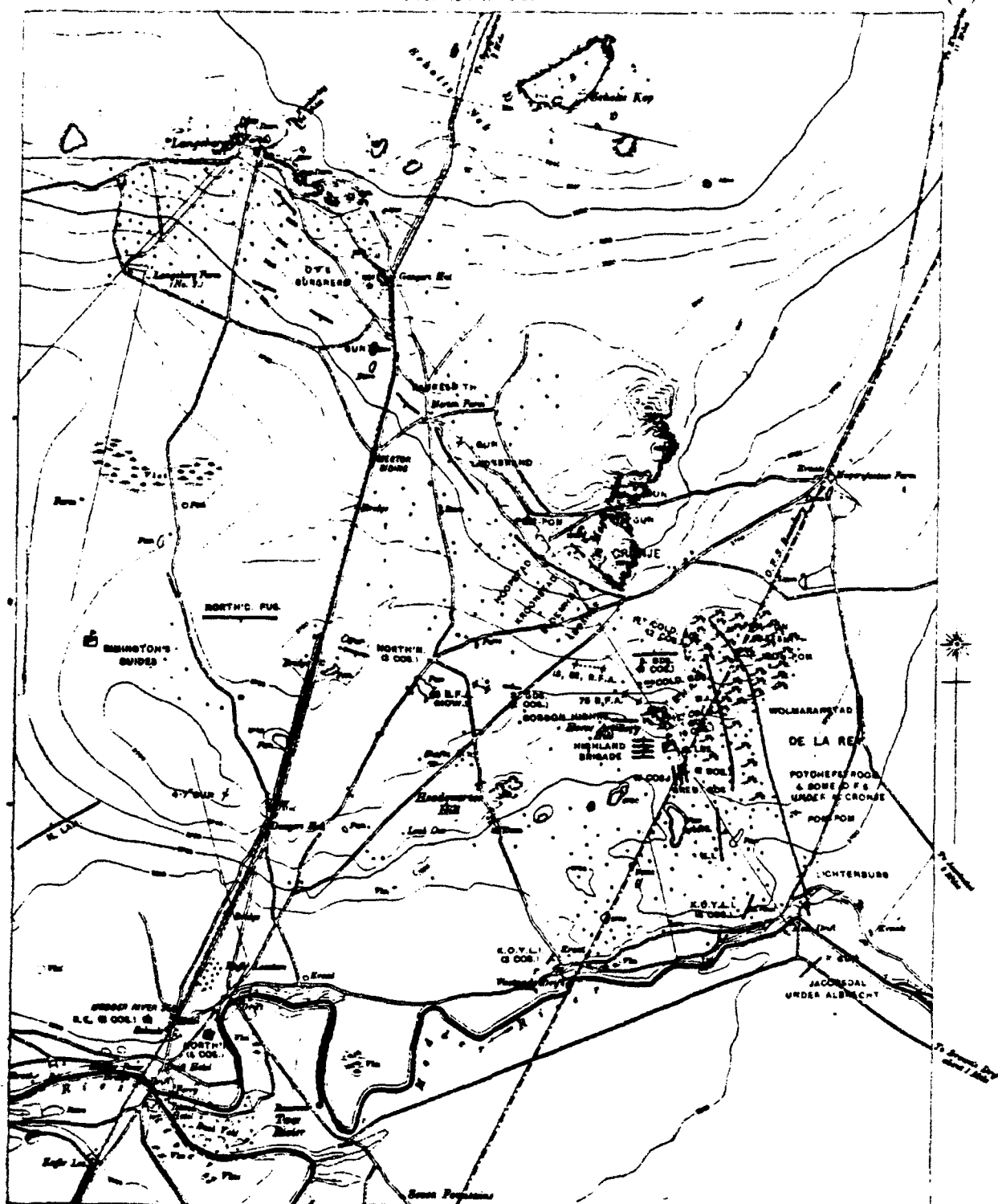


SOUTH AFRICAN WAR.
1899-1902 FROM:
AURICE, MAPS TO
HISTORY OF THE WAR
IN SOUTH AFRICA.

MAGERSFONTEIN

Nov 11, 1900
SITUATION AT 3.30 P.M.

No 13. (h)



Scale of One Inch to One Mile 1:63,360

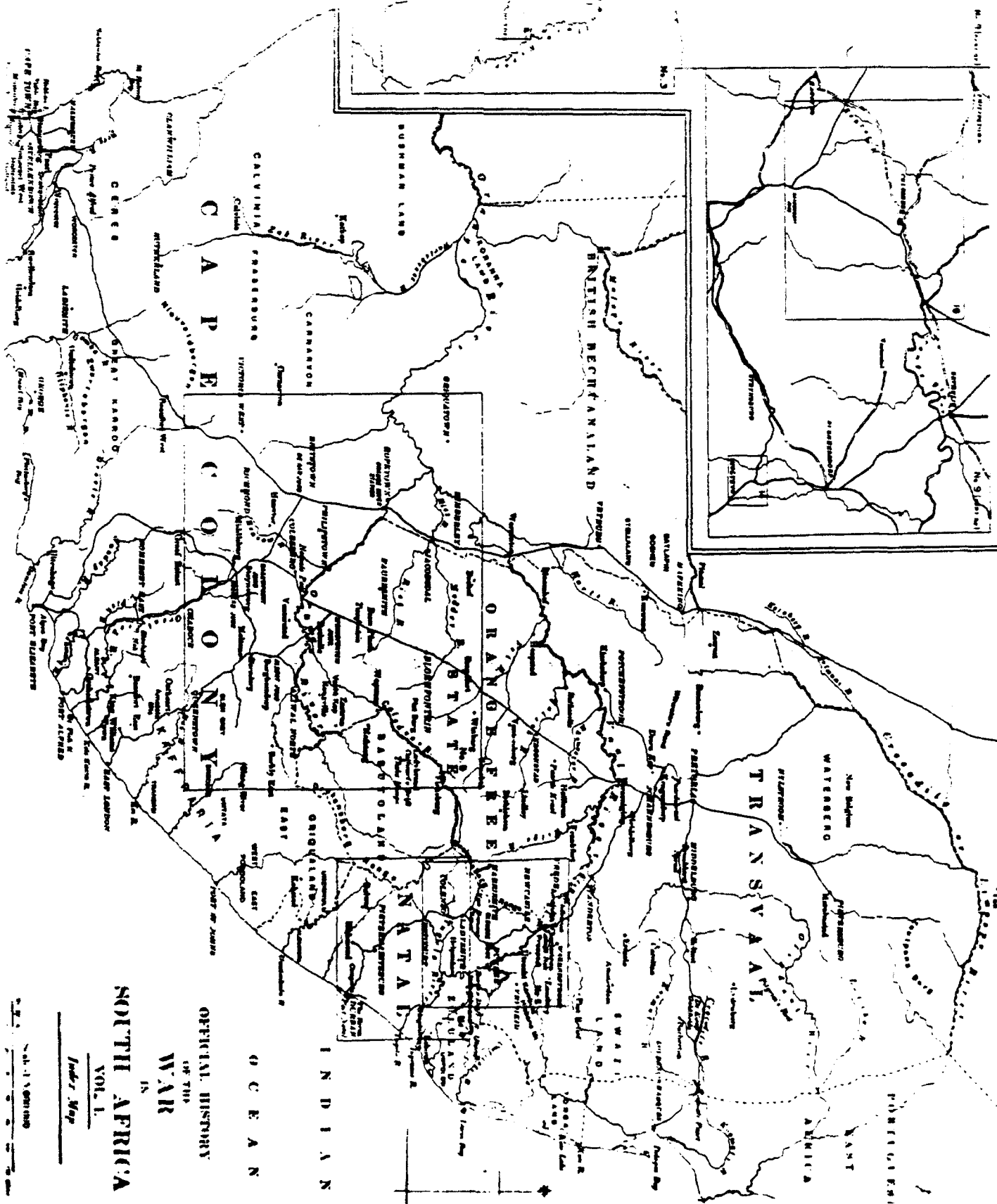
Feet 0 100 200 300 400 500 600 700 800 900 1000

From lines at approximately 90° N. 1

Height in Feet above Sea-level

SOUTH AFRICAN WAR, 1899-1901 FROM: MAURICE, MAPS TO HISTORY OF THE WAR IN SOUTH AFRICA.

SOUTH AFRICAN WAR.
1899-1902 FROM:
MAURICE, MAPS TO
HISTORY OF THE WAR
IN SOUTH AFRICA.



SOUTH AFRICA

VOL. I

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WAR

OFFICIAL HISTORY
OF THE



FROM: CPT. VIETNAM STUDIES, FIELD ARTILLERY, 1954-1971

ENDNOTES

¹ HuLa Wass de Czege, "Understanding and Developing Combat Power," 10 Feb 1984, 7.

² US Army, Training and Doctrine Command, "FM 100-5 Operations," Preliminary Draft, Unedited (Fort Monroe, VA: US Army Training and Doctrine Command, 21 Aug 1992, A-2.

³ John I. Alger, The Quest for Victory, (Westport, CN: Greenwood Press, 1982), 12-20. Alger discusses Lloyd's role as an early founder of the Principles of War on page 12. Alger notes on page 20 that Jomini, in the first volume of his Traite, credits Lloyd with originating the principle of mass.

⁴ Antione-Henri Jomini, The Art of War, as found in Roots of Strategy Book 2, (Harrisburg, PA: Stackpole Books, 1987), 461.

⁵ Larry H. Addington, The Patterns of War Since the Eighteenth Century, (Bloomington, IN: Indiana University Press, 1984), 17.

⁶ James J. Schneider, "The Theory of Operational Art," (School of Advanced Military Studies, 1 Mar 1988), 8.

⁷ Ibid, 9.

⁸ Trevor N. Dupuy, The Evolution of Weapons and Warfare, (Indianapolis/New York: Bobbs Merrill, 1980), 167.

⁹ Jomini, The Art of War, 461.

¹⁰ Dupuy, The Evolution of Weapons and Warfare, 202.

¹¹ Addington, 65-66.

¹² Christopher D. Bellamy, The Evolution of Modern Land Warfare, (London: Routledge, 1990), 61. See also Dupuy, The Evolution of Weapons and Warfare, 288-299 for a graphic portrayal of dispersion since 400 B.C. Dispersion has had its most rapid growth from 1900 until the present.

¹³ Jean de Bloch, The Future of War, (Boston MA: Doubleday & McClure, 1899) as found in The Future of War, Combat Studies Institute Text for A699 The Evolution of Military Thought, USACGSC, Fort Leavenworth, KS. 43. Bloch discusses his view of future war on pages 1-19.

¹⁴ James J. Schneider, "The Theory of the Empty Battlefield" RUSI Journal, (Sep 87) as found in Course 1 Foundations of Military Thought, School of Advanced Military Studies text, course 1, USACGSC, Fort Leavenworth, KS. 14a.

- ¹⁵ Dupuy, The Evolution of Weapons and Warfare, 312.
- ¹⁶ Trevor N. Dupuy, Understanding War, (New York: Paragon House, 1987), 19.
- ¹⁷ J. F. C. Fuller, The Foundations of the Science of War, (London: Hutchinson, 1926), 265.
- ¹⁸ Huba Wass de Czege, 7.
- ¹⁹ Ibid, 7.
- ²⁰ Dupuy, Understanding War, 81-89.
- ²¹ Dupuy, The Evolution of Weapons and Warfare, 312.
- ²² Jomini, The Art of War, 466-468.
- ²³ "FM 100-5 Operations" Preliminary Draft, 7-8,9.
- ²⁴ Dupuy, Understanding War, 6.
- ²⁵ Ibid, 6.
- ²⁶ Dupuy, The Evolution of Weapons and Warfare, 312. In the Napoleonic Wars, there were 4970 men per square kilometer. By the October War, there were only 25 men per square kilometer. Dividing 4970 by 25 equals 198.8, which is the figure derived for the citation.
- ²⁷ Mao Tse-Tung, Struggle in the Chinkang Mountains as found in A699 text Selected Writings of Mao Tse-Tung, Combat Studies Institute, USACGSC, Fort Leavenworth Kansas, 254.
- ²⁸ William G. Stewart, "Interaction of Firepower, Mobility and Dispersion," Military Review 39 (March 1960): 32.
- ²⁹ Dupuy, Understanding War, 84.
- ³⁰ Carl von Clausewitz, On War, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 119.
- ³¹ Schneider, "The Theory of the Empty Battlefield," 15.
- ³² Christopher D. Bellamy, The Future of Land Warfare, (New York, NY: St. Martin's Press, 1987), 131.
- ³³ S. L. A. Marhsall, Men Against Fire, (Gloucester, MA: Peter Smith, 1947) 42.
- ³⁴ Martin Van Creveld, Command in War, (Cambridge, MA: Harvard University Press, 1985) 2.

³⁵ Anthony Kellet, Combat Motivation. (Kingham, MA: Kulwer Boston, Inc., 1982) 226-227.

³⁶ Frank Barnaby, Future War. (New York, NY: Facts on File publications, 1984), 72.

³⁷ Bellamy, The Evolution of Modern Land Warfare, 47.

³⁸ Mao Tse-Tung, Selected Writings of Mao Tse-Tung, 77.

³⁹ Clausewitz, 94.

⁴⁰ Lieutenant Colonel von Lindeneau, "What has the Boer War to Teach Us, as Regards Infantry Attack," a lecture delivered before the Military Society of Berlin, 5 March 1902, as found in the Journal of the Royal United Service Institution, volume XLVII, 52.

⁴¹ A succinct background of the Boer War is in Addington, 111. The strategic interests of Great Britain and the Transvaal and Orange Republics is in Leonard Thompson, A History of South Africa. (New Haven, CN: Yale University Press, 1990) 141. For a summary of key events, see Lieutenant Colonel H. M. E. Brunner, Boer War, 1899-1900 Organization of Forces. (London: William Clowes and Sons, 1900), 76.

⁴² Lindenau, 48-49.

⁴³ Historical Section of the Great General Staff, Berlin, The War in South Africa, trans. Hubert du Cane (London: John Murray, 1906), 67. Hereafter cited as du Cane.

⁴⁴ Thompson, 141-142.

⁴⁵ Wass de Czege, 7.

⁴⁶ Lindeneau, 51-52. The Boer Mauser rifle was easier to load than the British Lee-Enfield. As well, Boer artillery had predominantly quick-firing guns with recoil systems. The British guns had only rudimentary recoil systems and a slower rate of fire. However, these technological advantages were slight and did not make up for the numerical difference between the forces.

⁴⁷ Thomas Packenham, The Boer War. (New York, NY: Random House, 1979) 167. See also Thompson, 141. The British advantage in supply and industrial capacity gave them the capability to conduct a protracted war and increase their combat potential with greater quantities of weapons and equipment. Supply for the Boers was far more tenuous, as much of their new weaponry arrived just prior to the outbreak of war. Because the Royal Navy halted virtually all weapons

imports into South Africa at the outset of the war, the Boer ability to regenerate combat potential waned. Thus, the British advantage in combat potential continued to grow as the war progressed. This disparity ultimately caused the war to evolve into a guerrilla struggle and an armistice ended the war in 1902.

⁴⁸ du Cane, 325, mentions Boer marksmanship qualities. British marksmanship training is in Lindeneau 55.

⁴⁹ Ibid, 324-336.

⁵⁰ Ibid, 325.

⁵¹ Packenham, 35, 169.

⁵² Ibid, 130.

⁵³ Ibid, 208, "The Battle of Magersfontein," verse by Pte Smith of the Black Watch, December 1899.

⁵⁴ Ibid, 210.

⁵⁵ Fritz Hoenig, "The lessons of the South African and Chinese Wars," Journal of the Royal United Service Institution, 45 (March 1901): 292.

⁵⁶ du Cane 328-329.

⁵⁷ Ibid, 325-327.

⁵⁸ Ibid, 325.

⁵⁹ W. Baring Pemberton, Battles of the Boer War, (London: Pan Books Ltd., 1964), 77.

⁶⁰ Michael Howard, Chesney Memorial Gold Medal Lecture given on 3 October 1973.

⁶¹ Packenham, 228-232. For synopsis of Boer tactics, see du Cane, 324-325.

⁶² Ibid, 228-231. Packenham describes Boer command problems prior to the Battle of Colenso, 13 December 1899.

⁶³ Ibid, 232.

⁶⁴ du Cane, 327.

⁶⁵ Hoenig, 294.

⁶⁶ Barnaby, 22.

67 Stanley Karnow, Vietnam a History, (New York, NY: Penguin Books, 1983), 198-204.

68 Ibid, 415.

69 Dupuy, The Evolution of Weapons and Warfare, 281.

70 Sun Tzu, The Art of War, Trans. by Samuel B. Griffith, (New York, NY: Oxford University Press, 1963), 122. For difficulty of stronger nations bringing weapons to bear in guerilla warfare see Geoffrey Blainey, The Causes of War, (New York, NY: The Free Press, 1988), 201.

71 Clausewitz. Clausewitz presents the relationship between Infantry, Cavalry and Artillery on page 291. This monograph extends his argument to include other forms of combat power (such as aircraft) to be supporting branches as well. His conclusion that the Infantry is the most independent branch is on page 285.

72 James W. McCoy, Secrets of the Viet Cong, (New York, NY: Hippocrene Books, 1992), 37-44. The AK 47 was perhaps superior to the M16 (particularly early model M16s which frequently jammed) as its heavier bullet would penetrate jungle foliage easier. On page 219, McCoy describes the RPG as better than its US counterpart, the light anti-tank weapon (LAW) as it would penetrate more armor, and was useful in a variety of roles. On pages 219-220 McCoy also notes that the NVA/VC had one third to on half as many machine guns per comparable unit and that most US units had no equivalent to the recoilless rifles.

73 Captain Anthony V. Neglia, "NVA and VC: Different Enemies, Different Tactics," Infantry 60 (September-October 70), notes the VC use of booby traps and their psychological impact on page 52. Andrew F. Krepinevich, Jr., The Army and Vietnam, (Baltimore, MD: Johns Hopkins University Press, 1986), notes on page 201 the overuse of US firepower and the resulting dud rates that resulted in 27,000 tons of dud bombs available for VC/NVA use in 1967 alone. McCoy notes on pages 334-338 the various types of booby traps as well as their psychological impact. LTC James R. McDonough, in his book Platoon Leader (Novato, CA: Presidio Press, 1985) notes on page 43 that he was a casualty of a 60mm mortar round booby trap.

74 Krepinevich, 197.

75 Konrad Kellen, A View of the VC: Elements of Cohesion in the Enemy Camp in 1966-1967, (Santa Monica, CA: Rand Corporation, November 1969), 26.

76 Joseph I. Galloway, "Vietnam Story" US News and World Report, (29 October 1990), as found in AMSP Course 2

Readings, 21.

⁷⁷ George C. Herring, "Ia Drang Valley" in America's First Battles, ed. Charles E. Heller and William A. Stofft, (Lawrence, KS: University Press of Kansas, 1986), 326.

⁷⁸ Colonel William O. Staudenmaier, "Vietnam, Mao and Clausewitz," Parameters 7, (January, 1977) 82-85. Various other sources identify similar NVA/VC tactics as well as US tactics.

⁷⁹ Kellen, 24.

⁸⁰ Krepinevich, 254-257.

⁸¹ Wass de Czege, 8.

⁸² McCoy, 144-147. McCoy notes on page 147 the dispersed nature of NVA/VC campsites. Area coverage in kilometers is as follows: Company, 1.4x.20; Battalion, 5x.50; Regiment, 20x2.

⁸³ Krepinevich, 197.

⁸⁴ Ibid, 192.

⁸⁵ Kellen, 44-55.

⁸⁶ William Darryl Henderson, Why the Vietcong Fought, (Westport, CN: Greenwood Press, 1979), 110.

⁸⁷ Kellen discusses the VC response to American firepower and mobility on pages 24-26. On page 33, Kellen describes how cadre leaders strengthen unit morale after defeats. McCoy describes the three man cells that predominated NVA/VC units on page 81.

⁸⁸ Colonel Jack Samson, "Viet Cong Tactics Ten Against One," Military Review (January 1967), 92. See also McCoy 87-88. Kellen notes on page 24 that VC units only conducted full scale actions a few times per year.

⁸⁹ Kellen, 6.

⁹⁰ Ibid, 74.

⁹¹ Ibid, 56.

⁹² Staudenmaier, 88-89. Staudenmaier identifies the center of gravity for the Vietnam War as the commitment of the people of South Vietnam to their government. He further concludes that even without political restrictions, US pursuit of purely military objectives was a misplaced strategy.

⁹³ Major Steve Sittnick, interview by author, written notes, Fort Leavenworth, KS, 9 November 1992. Major Sittnick was the Executive Officer of 4-325 Infantry, 2nd Brigade, 82nd Airborne Division during Operation Desert Shield.

⁹⁴ Major General Louis MacKenzie, Canadian Armed Forces, lecture given at Fort Leavenworth, KS, 21 October 1992. General MacKenzie commanded UN peacekeeping forces in former Yugoslavia. This situation pitted lightly armed peacekeeping forces between more heavily armed protagonists.

⁹⁵ Bellamy, The Future of Land Warfare, 190. MLRS and M109A6 capabilities are outlined in "Army Weaponry" Army 42 (October 1992) 255-262.

⁹⁶ "FM 100-5 Operations" Preliminary Draft, B-4 through B-5.

⁹⁷ Packenham, 200. This illustration is a combination of the battle map on page 200 and an illustration of a proper defensive position by Major B. F. S. Baden-Powell in his book War in Practice, (London: Isbister & Company, Ltd., 1903), 83. Baden-Powell's book is from his observations of the Boer War. He notes the "exceptional position" the Boers had at Magersfontein on page 91.

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